Occasional Paper No. 33

CONTINUITY OF LINKAGES: A STUDY OF TRANSNATIONAL CORPORATIONS IN THE POWER SECTOR OF INDIA, 1947-1967

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    NrtlPENDRANATH BANDYOPADHYAY
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13. Research Notes and Documents Collected by the Late Prodyot Mukherjee
    ARUN GHOSH, *comp.*

14. Choice of Techniques and Technological Development in Underdeveloped Countries : A Critique of the Non-Neoclassical Orthodoxy' *(Cambridge Journal of Economics,* June. 1978)
    AMIYA KUMAR BAGCHI

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CENTRE FOR STUDIES IN SOCIAL
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I have been associated with a research project on 'Foreign Investment, Import of Foreign Technology and Development of Indigenous Technology In Indian Industry', under the supervision of Amiya Kumar Bagchi, Professor of Economics, at the Centre For Studies In Social Sciences, Calcutta. In this project I have concentrated on the study of the electrical equipment industry. This paper is the third in the series of articles, written by me with the data collected for the project. The present paper was presented to a symposium on 'Transnational Corporations And The Third World Development[1], organised by the Indian Institute of Management, Calcutta and the Centre For Studies In Social Sciences, Calcutta, on March 21, 1980. I am grateful to Amiya Kumar Bagchi and Partha Chatterjee for the corrections made on an earlier draft of the paper. I am indebted to the members of staff of the libraries of the Dajnodar Valley Corporation, Calcutta, the Federation of Indian Chambers of Commerce and Industry, New Delhi and the Indian Council of World Affairs, New Delhi, for invaluable help rendered by them in the collection of data.

Subhendu Dasgupta
June, 1980.

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CONTINUITY OF LINKAGES : A STUDY ON TRANSNATIONAL CORPORATIONS IN THE ELECTRIC POWER SECTOR OF INDIA, 1947 - 1967

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Introduction

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Studies on transnational corporations occupy an important place in the understanding of the modern phase of the economics of imperialism aid of its influence on the course of economic development of the ex-colonies» which have earned independence in the middle of We"twentieth century. The electric power sector constitutes a vital force behind the economic developments any country. In the course of import of technology for development of the electric power, sector a typical third world country becomes linked - rather aeymetri-cally with transnational corporations,advanced capitalist countries and international financial organizations. With the course of time, the type df linkage changes but it does not end? there remains a continuity of linkagedy[1]—- however different the form may be. ai

The empirical evidence, on which this study is based, relates to the power sector of India in the first two decades since political independence, that is, between 1947 and 1966-67* The study is divided into four sections.- The first section deals very briefly with the electric power equipment industry of the world and the position occupied by the transnational corporations. The second points out the role played by the transnational corporations in the construction of power plants in India. The linkages established between the transnational corporations and the private sector in India in the manu-facture of electric power equipment is the subject matter of the third section. The fourth section shows the linkages of the transnational corporation with the public sector in India in the manufacture of electric power equipment. On the basis of the evidence put forward in the last three sections* this study tries to build up the.framework of the continuity,of linkages. One point needs to be clarified in the context of the scope of the s t u d I t

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excludes any kind of cost-benefit analysis and comparative study of the degree and form of linkages or dependence in the different stages of activities It just shows that the linkages with the transnational corporations, continue

with different forms of activities in the electric power sect or ..of India, l example, construction of power plant, manufacture of electric power equipc in the private sector and in the public sector. The mera change of activit does not sigaafy that the eccnomy is out cf the orbit of the operation of transnational corporations.

Electric Power Equipment Industry In The World.

The electric power equipment "indxist*jr in. the world ±s characterised by three important features. Mrsty the industry is dominated by a very fei big transnational corporations, "mostly~originating_;frQm:_the United. States o: America. The West European fiims, except-a~few,Jand Japanese firms are dependent on the 'industry leaders'. All the major firms are interlinked

with one another in several ways. Secondly, excess capacity, large capita] requirements for research and development* high overhead costs, fluctuating demand and the fear of competition led to the international 'Cartel-type' agreements of the transnational corporations. Foreign markets attracted tb attention of the dominant firms very early in the development of the industr The'world's major firms appreciated the advantages of restraining internatio competition as early as 1900, and entered into agreements that successfully, carfcelised much of the industry's world trade. Although secrecy surrounds most cartel arrangements, reports and cartel contracts reveal that the carte set prices, allocate markets, and set quotas and compensations for members a well as engage in predatory practices against outsiders. Thirdly, the main emphasis in the electric power equipment industry is on the continuous increase: in the size of the electrical system. Item the beginning, the main thrust cf technological 'progress' has been in the capability.of designing and producing'the 'ever larger equipment'. ..'While in the larger units the leaders, of the industry nearly dominate the world market, /in smaller sizes, technology is more widespread, even accessible to producers in developing countries' •

Linkages of Transnational Corporation with the Third World Countries.

The transnational corporations establish linkages with the third world countries in two forms. One form is the export of design and equipment in the construction of electric power plants in the third world. The other form is export of technology for the manufacture of electric power equipment in the third world.

The first form of linkage is determined mainly by three factors, traditional and political ties, tied credit ani the relation between consultant engineers and equipment manufacturers.

Trade linkages of transnational corporations with third world countries arise from traditional ties or previous political association, such as language, education and experience of administrators and engineers, existing equipment, trade channels, etc.[7]

'The second politicallyKiirected group of sales is in areas whera direct political ties have weakened. The determinants of export success here are the export of credit and economic aid offered by the governments and the financial organisation of the sellers' countries'.[8] The development of electric power on the model of developed countries requires huge capital. This type of investment has a large foreign exchange components,. Third world countries generally have small capital resources, their foreign exchange reserves being even smaller. Their purchasing policy thus appeals to be to seek external credit resources. Soon after World WWer II, countries that previously had been tied to Western Europe found that the electrical equipment manufacturers in Britain, France and West Germany were fully occupied in rebuilding their own electricity networks. They could supply neither equipment nor engineering advise for new systems^nor funds with which to build power stations. The United States was in the best position to provide equipment and financing. It did so in the form of development grants and loans. TThe most relevant of these, now, are the development loans granted by the Agency for International Development ... In the late 1950s ... West European countries again were actively seeking export orders ... In order to compete for power projects^ in developing

countries, the Europear3developed programmes that combined aid with ccmuerc credit. These involved combining government development loans with commerc credit..o When' T7e&t German heavy eleatrical equipment manufacturers are bii for a project, their offer can. be backed by a government development loan . Austria, France, Italy and Japan also have, instituted government programmes facilitating export credit'.[9] Apart from governmental sources, private or intergovernmental financial sources such as the World Bank play an importar role in the financing of the electric power plants in the third world count] Several conditions are attached to the loans'. Official bilateral sources a: usually tied to the purchase of the capital equipment from the donor country For example, half of the United States heavy electrical equipment exports nt in the 1960s were sold under Agency for International Development loans.[10] Obviously, the heavy equipment producers, the transnational corporations are natural supporters of bilateral aid programmes.[11] Projects financed bythe Wc Bank are subjected to international tenders • International bidding tends tc favour the well known firms in this business.[12]

Planning and construction of the electric ppwer plants in the third world countries in imitation of the prototype of plants in the developed countries requires, as 'chain-effect', expertise in civil, mechanical and electrical engineering, equipment design and project management of the developed countries. Accordingly, the task is undertaken as turnkey project where a foreign contractor is generally in change of the whole project. 'Al the technological decisions are in his hands, including the participation of foreign and local sources for the provision of equipment, materials and techi services . The country usually receives the product, a power station, rather than the technology. In some extreme cases, the so-called, product-in-hand project, the foreign contractor even takes care of the provision of services for the current operation of the plant'.[13] The consultant engineers in most cases are linked with the transnational corporations in power equipment-. So: they take advantage *of* their position and place the order with the associatec transnational corporation without looking for more competitive sources of equipment or expertise*

"Development of, power projects in. the nature of developed countries, the political and ec enemies ties ^existence of:—cartel arrangements, the provision 6f

equipment linkedto aid schemes, ara$_t$ the important factors explaining the control of the third world countries'r market by the—transnational corporations —in power equipment.

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..r The linkage of transnational corporations with the third world countries is not limited to trade only. It extends into their participation in the manufacture of electric power equipment in these countries. The latter is the outcome of two sets of factors. The first set consists of policies, of the governments of third World countries favouring the setting up of woioctrio power equipment industries. The second is the interest of the transnational corporations in keeping a fotthold in the market of third world countries. Governments of third world countries have shown their vital concern in the initiation of this industry by giving it a prominent place in their development plans. 'The international" companies wore taken by surprise Almost without exception, the international firms question the economics of heavy electrical equipment manufacture in developing countries. Theoretically if they had realized the determination of the developing countries to build these industries [14] they might have—devised some scheme for sharing the markets'* The linkages established on the basis of this motive are of two types. One is in the form of establishment of subsidiary fixns, sonetime by W»y of acquisition of already existing fiims and the other is a joint venture with the local entrepreneur in the form of technical and financial collaboration. 'Obviously, not all of this variance can be explained solely by informal and formal market allocation strategies of transnational corporations. Other factors influence (the parti - cipation in the manufacture in the third world countries), such as special currency areas, preferential trade agreements, transportation and communication costs, historical ties and perceived risks'. [15]

We would now analyse the electric power sector of India, being the [16]

second largest market among the third wrld countries in this structure of linkages between the transnational corporation and the third world countries.

Electric Power Sector In India

The story of electric pov?er development in India's Five-Year Plans is told in the study by K. Venkatraman, the-then Director in the Ministry of Irdustrial Development, Government of India,and Special Assistant to the

Minister for Industrial Development. With the beginning of the First live-Year Plan, electric power development programmes received a fillip, but the progress of power.-programmes during the period (1951-52 to 1955-56) was described by the Second Five-Year Plan document as only fairly satisfactory. This.v?as because, among other things,-considerable delay was experienced during the early stages, and the country was dependent on impprted machinery and equipment for generation and transmission of power, and delays occurred because of protracted deliveries from foreign manufacturers. The Third Five-Year. Plan document ascribed the shortfall mainly to foreign exchange difficulties that arose during the early years of the Second Plan. To avoid severe power shortage in the early years of the Third Plan, steps were taken provide foreign exchange for implementing the remaining power schemes of the Second Plan. It was clear that even during the Third Plan, a large proportic of the machinery and equipment would have to be imported. Again, according t the Fourth Plan document, power supply at the end of the Third Plan remained unsatisfactory. The reasons were said to be first, procedural delays in getting the projects finally accepted by foreign aid-giving agencies since they were tied-up in principle with foreign credits; secondly, the shortage c free foreign exchange for import of ancillary equipment not covered by foreig 'aid'; thirdly, procedural delays in the appointment of consultants; fourthly procedural delays in placing orders for equimpent; and fifthly, delays in deliveries of equipment from certain countries. This review of the achievem< in the power sector of India during the plan period reveals some important points: the Indian government had appointed foreign consul feints for the construction of the powar plants, had imported machinery and equipment- for the power projects, had received foreign 'aid' for the development of the pot sector. This was the result of the fact that India: had followed the path of developed countries for her power sector. As India had no technological base

for the construction of big power plants, transnational corporations were in the scene as the consultants and suppliers of equipment as India did not have sufficient foreign exchange rosourcos to finance.the-power plantst- foreign connt rios and the foreign aid-giving agencies were in the sence as doors.

Dependence On Foreign Sources : Financial Aspect

The degree of dependence on foreign financial sources could be illustrated by the fact that out of about 70 power projects commissioned upto the end of the Third Plan, nearly 75 percent of the projects were tied to foreign aid programmes.^^

There are two types of sources of foreign exchange loans - foreign governments, and foreign financial institutions. For intensive discussion we take cne foreign source of finance, namely, the United States of America as a case in point. Commencing in the first financial year of India's First Five-Year Plan, the Indo-US Technical Ccooperation Programme had been closely associated with the development activities, of India' in various directions. Power was one of the fields for which projects were aided by the programme. The US contribution in dollars was utilised TO meet the foreign exchange cost of equipment needed for the power plant projects well as services of foreign experts and training facilities abroad for Indian technicians. In order to realise the nature of assistance a few cases of agreements between the two governments of USA and India on the power sector can be cited from the reports on the Indo-US Technical Co-operation Programme.[19] ">

1. Agreement No. 11 : Project For River Valley Development (1 952)•

   The purpose of the project was to provide technical assistance and heavy equipment to help with dam, canal and power house construction of the schemes at Hirakud, Kakrapara, Mahi, Ghata Prabha, Tunga Anicut, Chod W$_e$ir, Chambal, Pathri.

   Total US contribution upto 30 June 1966 $7-917 million.

Agreement No.20 : Rihand Valley Development (1954) The purpose of the project was to generate power with the help of a dan on the river Rihand and a power house with an installed capacity of 250 m.w. The Indo-American programme assisted in the first phase of the project which included construction of the initial power plant, switab-yard installation and a major portion of the transmission system. The agreement provided funds in US dollars for the procurement of construction and laboratory equipment and supplies from outside India.and their transmission to India and for meeting the costs of technical services from outside India. Material and equipment worth $5,903,457-*73 were received upto March 31, 1959.

Agreement No.23 : Project For Improvement of Rajasthan Power Facilities

The purpose of this project is to assist the renovation and augmentation of the 19 state-cwncd thermal power stations in i^jasthan and extension of transmission and distribution linos to distribute additional power to be provided * Material and equipment worth $1,046,041.58 were received upto March 31, 1959.

Agreement No.56 s Project For Technical Services for Water Resources and Power Development (1956) The purpose of this agreement was to provide technical assistance and advisory services to the Central Water and Power Commission, New. Delhi for the development of power resources. There was a provision for making available the services^ of 21 engineers 13 short term consultants, a third country's technicians, a construction plant and equipment adviser , a hydraulic engineer and Wo heavy construction equipment specialists to advise and assist the Commission.

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Oho of the important channels of credit from the USA was the Agency for International Aid (AID) and its predecessor was the Development Loan Ptind (DLF). The credit was extended for the import of capital goods, equipment and spare parts and related services for specified projects. The extent of loan grantedty these two US financial agencies for the electric paver sector of India can be realised from Table 1•

Table 1

Loans Extended by US financial Agenciest AID and DLF for power projects in India

Date of Agreement	Project	Dollars in million
1. December 24, 1958	Equipment for Power Projects	9,5
2. June 30, 1960	Saravathi Hydro-electric (first loan)	6.8
3. June 30, 1960	Barauni Thermal (first loan)	3.5
4- June 30, 1960	Chandrapura Thermal (first loan)	27.8
5. June 30, 1960	Durgapur Thermal	18.0
6. December 5, 1960	Kanpur Thermal	1.5
7. December 5, 1960	Barapani Hydro	1.7
8. August 16, 1961	Talcher Thermal	28.4
9. August 16, 1961	Amarkantak Thermal	7.6
10. August 16, 1961	Saravathi (second loan)	14.0
11. June 16, 1961	Beas Dam	18.0
12. Fsbroary 26, 1962	Dhuvaram Thermal (first loan)	33.1
13. June 21, 1962	Bandel Themal	37.4
HV June 28, 1962	Sabargiri Hydro	18.0
15. June 28, 1962	Trombay Power Plant	17.7
16. March 8, 1963	Indraprastha Thermal	13.8
17. March 8, 1963	Satpura Thermal	19.1
18. May 21, 1963	Ramagundam Thermal	7.9
19. October 21, 1963	Chandrapura Thermal (second loan)	11.9
20. December .1.7, 1963	Tarapur Nuclear	72.7
21. November 30, 1964	Saravathi Hydro (third loan)	1.9
22. June 1, 1966	Dhuvaram Thermal (second, loan)	18.8

Source : United States Information Service, Fact Sheet No.22, United Statos Economic Assistance to Igdia, June 1951-July 1970, New Delhi, pp 23-26

The data presented here relate only to the early phase of the development of the power sector in India. However, this trend continued afterwards. The magnitude of , US credit in the power sector in India is indicated in a document of 1970. Of the 16 million kilowatts of power-generating capacity available at that time, as much COfli- third was accounted for by the 30 power projects aided by the United States.-*

Among the other countries that extended loads-for"the. power sector ic India in the initial phase (upto 1967-^6.8)^ .-Britain granted fts.58 million on account of equipment and services for power stations in east and central India, Federal Republic of Germany rendered a loan of Rs.144.2 million for -ttii4>o alternatois and power equipment and Japan supplied- Rs.556.5 mill-ion for power and transmission equipment in Durgapur, Kosi, KuttiadiUmiam»,, Gauhati and Jaldhaka projects.-*

Dependence On Foreign Sources : Technical Aspects.

The foreign financial sources brought with them some restrictions and pressures, directly or indirectly. For example India had to spend the _ aid- funds for importing goods and services only from designated sources. Eve without an explicit restriction, the donor countries had an advantage in tendering for, or supplying the specified item, and services. By exploiting this advantage, transnational'corporations of power equipment of donor c countries established their linkages with the electric power projects in India. Of the 30 paver projects-in India aided by the United States, 20 projects were equipped with electric power equipment products of the United States. This feature is substantiated by the data on import of electrical equipment from different countries,- which also extended foreign exchange loar for the power sector in India, furnished in Table 2. (one point is to be note regarding the data presented is that-the figures include not only the imports of generating and transmission equipment, but also equipment and machinery fc the establishment of heavy electrical'equipment manufacturing plants#as well as all other electrical apparatus and' appliances, as no separate data for power plant equipment is available).

Countries (Rs. in millions)

	1951-52	1952-53	1953-54	1954-55	1955-56	1956-57
1. UK	181.4	220.7	240.8	176.0	215.9	267.8
2. USA	46.3	44.0	45.3	25.8	30.2	30.5
3. IHG	11.7	25.6	30.9	31.2	50.6	75.1
4. Japan	13*0	12.7	5.4	8.1	18.0	15.6

	1957-58	1958-59	1959-60	1960-61	1961-62	1962-63
1. UK	320.4	213.7	21U5	208.5	205.1	207.4
2. USA	92.8	37.1	27.6	37.9	73.8	63.2
3. ERG	94.1	97.7	118.8	149.4	111.1	122.5
4. Japan	20.1	25.2	21.5	39.1	89.4	80.1

	1963-64	1964-65	1965-66
1. UK	226.4	200.1	168.8
2. USA	196.9	173.1	182.4
3. JRG	106.2	134.3	138.9
4. Japan	106.0	97.6	88.4

Source: K. Venkatraman, Power Development fa ^pfiifl f The Financial Aspects, New Delhi, 1972, pp. 130-31.

The impact of this linkage is felt on several aspects of the power sector of India. One of the important aspects, was that the power plants financed by tied credit and constructed with design and equipment from transnational corporations had a continued dependence for spare parts on the concerned transnational corporation. The Estimate Committee of the ELfth Lok Sabha, in their report on the power sector had ccmpiled comments from different quarters on this phenomenon.[22] The Member (Thermal), Central Water and Power Commission stated during evidence, 'when we place an order with a foreign firm for a particular item the foreign supplier cannot always supply the same from the shelf. Sometimes they have to

manufacture it and supply it. That necessarily takes 3-4 months[1.2]^ In a memorandum submitted to the Committee by a State Electricity Board it was mentioned thatj 'many of the existing_power plants are suffering for want of adequate imported s p a r e s " T h e Minister for Irrigation and Pov/er stated i: the Lok Sabha on Ibbruary.28, 1973, regarding the spares for the generators that, 'mainly the machines (generator) .are from-the USA and West Germany. There were some machines in Delhi and Talcher imported from International General Electric of USA, which were held up for spares.. We got these spares Unfertunately.r':these machines got broken, may be due to faulty design. Any way, it is too late in the day because the guarantee period is over. The machines have been waiting, for spares for nearly 5 to 6 months. The worst thing was in Durgapur. There were two West German machines' in Durgapur and one at Bokaro, waiting for the spares- for s m e time'.[25] In respect to the efforts made to substitute indigenous spares, the representative of the Bharat Heavy Electricals stated that, "the manufacturing plants have the mai difficulty of net being able to get the manufacturing design and production plans for spares which have been imported... The plants are manufacturing to a certain design and the imported equipment may be of a different design. These design drawings and production drawings are' not really available to the manufacturing plants

In order to understand this type, of impact -of the linkages between the transnational corporations and the power sector in India, we now turn our focus from the general shpere of the power sector in India to a parti- cular power project - the Damcdar Valley Corporation, for an intensive look.

Impact of Linkages : A Case Study ; DVC

Linkages do not start only from the desire to produce more electric power. Even schemes with a wider perspective such as multipurpose river valley development lead to the introduction'/foreign firms into the sector. This is illustrated, with the case of the Damodar V$_a$lley Corporation (DVC) will first attempt to describe the circumstances that created the background!

for the transnational corporations to establish linkages with the DVC. It .can seen that frco the very inception of the DVC foreign political and economic powers have determined the course of the project—*

DVC formally came into existence in July 1948. One of the declared functions of the Corporation was, 'the promotion and operation of schemes for generation, transmission and distribution of electrical energy, both hydro-electric and thermal'.[27] In August 1944, the Government of Bengal forwarded a copy of the report of the Pamodar Flood Enquiry Committee to the Government of India for consideration. R.G. Casey? then Governor of Bengal followed it up by a letter to the Viceroy dated September 1944 in which he suggested that the whole subject should be surveyed by high level experts. He commented that, really high level man or men frca say, the United States should be obtained and added." that, 'I assume that there is no one in India who could advice us on the highest level[1]'.[28] It is to be mentioned in this context that one of the first few to draw public attention to the Damodar issue and the persai who insisted on a comprehensive solution was an eminent Indian scientist Meghnad Saha, who was. a member of the Damcdar Flood Enquiry Committee. The Government of Lord Wavell appointed W.L. Voorduin, a senior engineer of the staff of the Tennesse Valley Authority (TVA) of USA, for a term of three years with the assistance of Mr. Lilienthal, Chairman, of TVA. Voorduin appointed as the Kydro-electric member of the Central Technical Power Beard to study the problem of the Darnedar and to make recommendation for its comprehensive development. Accordingly,, in August 1944, he submitted his "Preliminary Memorandum on the Unified development of the Damodar river System". The unified scheme was also ...amined by the • four consultants appointed by the Government.. Two of them were Ross Reigel and Ered Schlemmer, US engineers, especially brought out to _udia.[29] Before leaving India, Voorduin had drawn up an "Invitation for Preliminary Proposals en the Designs, Purchase of Materials* and Equipment and Supervision of Construction of the Dams under the Damodar Valley Project". In August 1948, the.DVC issued the invitation to reputed foreign firms of consulting engineers, and contractors. In addition, proposals were placed through the British Trade Commissioner, French and Italian embassies and Swiss

and. Swedish legations in India. By October 1948 replies were received from jfinoot foreign firms, the bulk of which came from the USA.[30] Hence, the transnational corporations got the opportunity to penetrate into the power sector in India and the linkages were established.

Technical Aspects.

The Central Technical Power Board of the Government of India first sot the ball rolling for the steam power plant. Its successor, the Central Electricity Commission (CEC) continued the work. At the initial stage, DVC made use of the CEC's set up for the project. CEC drew up the preliminary plans and specifications, invited tenders from American and European manufacturers m iaarcn 1948, analysed them and made recommendations to the DVC. On the basis of these recommendations the tender of the International General Electric Company (IGE) of the USA, the biggest transnational corporation in the power equipment industry, was accepted, and a contract was signed with than for a thermal power plant at Bokaro, with an initial capacity of 150,000 KS7. Similarly, .on CEC's recommendation the Kuljian Corporation of the USA was appointed as Consulting Engineers of the DVC* Kuljian Corporatic was linked with the IGE, as Kuljian was initially employed by the IGE for the engineering work needed for the preparation of its tender.[31]

The interlink between the consultant engineer and the construction firm is well established by the following facts.

-[1] The DVC decided in October 1948, to separate the functions of consulting engineers and construction firms in respect of dam design, so that consulting engineers might act on behalf of the DVC and not of the IGE. A series of discussions were held with the representative of the IGE and the Kuljian Corporation. On the part of the concerned parties., the following points were raised (a) IGE's own engineers and the Kuljian Corporation had been working together on the plans and specifications for the Bokaro thermal power station so that a line of demarcation between the two could not be easily[1] drawn, (b) IGE would still require the services of consulting engineer

for coordinating their own equipment with those of other manufacturers so that they could not entirely dispense with the serivices of the Kuljian Corporation and (c) the plans and specifications had already progressed so far that any separation at that stage would create dislocation in the process cf the work'. The IGE had also cade it clear that it was their intention to c n^age the Kuljian Corporation on construction management and initial operation zz the Bokaro Station in case UVC decided to entrust them with this work as well. The IGE further confirmed that their warranties for the satisfactory operation of the equipment supplied by them wculd remain "fully effective" if the services of the^Kuljiaru Corporation were utilised for the purpose.[32]

The significance of this interlink can be realised if we analya® the scope of the work of consulting engineers. In the contract between the DVC and the Kuljian Corporation, USA, for engineering and .construction supervision services of the 4th Unit extension of the Bokaro thermal power station it was prescribed[33] cthat,

'The consulting engineer shall (a) review/scrutinize -

i) all necessary tender specifications before issue

ii) the bid analysis and purchase recommendations

iii) all contracts and orders before placing the orders-

iv) cost estimates, the billa of materials, basic flow and key diagrams, heat balance sheets, general plant layout, detailed drawings, all construction drawings, investigations, repbrts, if any, furnished by the owner x*j;

v) vend or' s drawings

vi) calculations, detailed drawings of all equipment layouts, piping*, wiring, supports/ Imulati'on, structural modifications, additions and alternations to foundation facilities and-substations,

vii) results of acceptance test reports on the plant and equipment

viii) progress schedule

ix) monthly progress reports and cost reports

x) construction programme.

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i) organising and establishing construction plant

ii) recruitment of local personnel for the construction programme

iii) establishing field accounting system

iv) establishing field store system.

(c) supervise -

i) contracted or subcontracted woik

ii) TOrk carried out with fiald force

iii) manufacturer's erectors services.

It is quite clear from the scope of the function,of the consulting engineer that the selection of the type of equipment and source of equipment were under the control of the consulting engineer. It is obvious that those would be determined by such factors as the standard of equipment as are in operation in the heme country of consulting engineer, the relation between the consulting engineer and the manufacturers of equipment.

The dictation of the type and source of equipment can be indicated by another document. In a letter to the Chairman cf the DVC, the International General Electric Co. (India) Ltd., wrote that, 'we are pleased to inform you herein of the materials which in addition to those included in the purchase contract, must be procured £rcm the United States for successful and timely caipleticn of the Bokaro Thermal Power Station

In addition to the comments given for each group, we would emphasise that our design of the power plant is based on electrical and mechanical equipments conforming to /merican standards and practices and any delay or failure to order additional critical materials from the Us will retard the progress we have already made on the design on this basis, seriously upset the construction schedule and oonseruently delay putting of the station into operation –

1) ;3uilding Structural steel– – our design is based on American Structural shapes , many of which particularly the heavy sections, are not available outside the United States.

2) Power and Controls Cables, Conduit and lietal Enclosed Main Generator;– 3ust Ducts – Our station design is based on. American practice standard, /merican dimensions and ratings which are not available elsewhere.

^levator – Freight elevator shaft will be designed.to American standards.

4} Machine Tools for Repair Shop – jaist be designed for American threads and machine tools standard'.

^enee, as the project was based on the example from the USA, consultir. engineers were appointed from the USA? the consulting engineers being from the USA would select equipments from the USA? as the main equipments were based on American standard, the ancillary equipments had to –be imported from USA* It was pointed out in the report of the Rau Commission that, it had been planned that the foreign big firms would be appointed for all the power projects in exchange of payment for construction cost and technical fees.

financial Aspects.

The linages between the transnational corporations and the DVC resulted in, the linkages between foreign financial sources and the DVC. On the other hand, the linkages between foreign financial sources and DVC determined the linkages between the transnational corporations and the DVC.

It was mentioned in a Kemorandun in 1949* that, 'the Damodar Scheme has reached a stage -where further progress is conditioned' by the availabili

of an adequate dollar loan'. As the Government of. India did not have a substantial reserve of foreign exchange to support this huge investment, 'a dollar loan, if granted to the Corporation to cover this amount* will help relieve the strain on the limited dollar exchange resources of the Grovernme of IndiaHence, 'for the further progress of the scheme the urgency of immediate sanction of an adequate dollar loan can hardly be over stressed'*

As a source of Dollar loan the ycrld Bank was approached. In Augus *19li9,* the world Bank sent out Mr. A-D* Spottswood to make a through technic and economic study of the Bokaro steam Power Project. Mr. spottswood spent about a month with the Corporation, during which time he also visited "the project sites in "the "/alley.

On April iGj 1950 two agreements were signed. One was the "Loan Agreement (Bokaro-Vonar Project) between India and IBPD" and another was "Project .Agreement (Bokaro-^onar Project) between IBBD and DVC". Under the Agreement the world Bank has extended to the Government of India a loan amounting to $18,500,000 to meet the estimated foreign exchange requirement of the Bokaro-'^onar Project as from- January 1, 1950.35 j_n 1953, Government of India obtained a second loan from the world Bank for Maithon, Panchet.^ In 1958, a third loan of the amount of $22 million dollar for the Bokaro Thermal Power Project (4th Unit) and the rrurgapur Thermal Power Project w obtained from x-rorld Bank*^

The Development Loan Fund* an agency of the Government of the United States .of America, now known as iie Agency for International —Development, has also extended loan to this sphere. In an agreement on June 30, 1960, the said Agency agreed to provide $30 million to meet foreign exchange requirements for the equipment, materials and services, required to construct Ohandrapura oject.[42] The extension of one unit of 140 mw capacity to Chandrapura Thermal Power "Station rag also covered by the AID Loan, amounting upto $16 million for the foreign exchange cost of goods and services of —the project, according to an agreement'signed on October 21, 1963.^

Another agency of the United States, "foe international —Envelopment Authority also granted loan of $18.5 million to cover the foreigi exchange cost of the 'Fourth DVC Project' i.e., Durgapur Thermal Power Station, Transmission System, Extension of substation.[44]

Foreign loan wis received not only from the USA, but also from European sources, as there were consultant engineers, construction firms and equipment suppliers from different European countries.

The features of tied aid has already been discussed, transnational Corporations sold equipments to the projects, financed by sources originating in their home countries. For example, the amount of loan received for Chandrapura Project from the AID, of the USA was $30,000,000, whereas, the payment made by the DVC to the films of the USA for ihe equipments procured for the project was $29,210,000.[45] Similarly, the amount of loan received for Chandrapura Project II from the AID, of the USA was $16,000,000, whereas, the payment made by the DVC to the firms of the USA for the equipment procured for the project was $10,707,119.[46]

The interest of the loan-giving agency does not cease with the payment of loan. It 'keeps a close and continuous mtch on the progress of the undertaking Airing the entire-life of the loan and does not hesitate to bring to the notice of ihe authority concerned any defects and short comings'such as would affect its utility or impair its soundness*.[47]

The aid-giving agency took a keen interest also in the appointment of the consultant engineer. One example was that IDA approved the appointment and the scope of the services of the Bruce & Roe Inc. of the USA as the consulting engineers for the extension of the jCUrgapur Thermal Power Station in 1962. A representative of "the B&R had to review all the bids for engineerin designs and procurement of equipments. B&R sent final recommendation from New York. ' Another example war that the World Bank helped in tie final selectio of the Chief Engineer of the D7G. A.M,Komora was selected and joined the WC in December 1950., Komora worked in the Consumer Power Company, USA, Commonweal Southern Corporation USA, flatro.it Edison Co. USA and Tennesse Valley Authority —•USA,^ The relation between the foreign consultant engineers and the transnatia corporations .has already been discursed.

Hence the circle is complete. As the power projects were planned according to the prototype of the developed countries, so lhe consultant engineers were appointed from developed countries. foreign consultant engineer were linked with the transnational corporations in the electric powar equipment industry. Equipment for the power projects were imported from the tr*D3nationa corporations. :.It needed huge foreign currency. Third »forld countries did not have sufficient foreign exchange reserves. Foreign financial sources were approached. "Foreign agencies .gaye loans. Doan were tied-credit. Consultant engineers were to be appointed from the donor countries. Consultant engineers —ere linked with transnational corporations. With the loan given equipment and cervices were to be taken from the loan giving countries* where the transnation corporations dominated -the manufacturing sector.

This explains the linkages established between the transnational corporation and the power sector of the third world countries throu^i trade.

Linkages Of PNQs with The Power. Equipment Manufacturing Sector In India. ! Private Enterpriser

"The circle breaks with a new. element - the manufacture, of power equ.Lpme in the third world. A new"form of linkage between the i?ransna ti anal corpora- and the third world countries is boin3 This new form is a culmination of

of initiatives from two quarters – the transnational corporations and the entrepreneurs in the third world.

We intend> first of all, to trace, in a very brief manner, the factors behind the motives of the international firms for entering into •<the manufacturing sector in India. The transna tional coroprations always try to keep a foothold in every market, both old and new, in all possible ways except when for strategic reasons, one transnational corporation keeps itself out of the market of another. – The Government of –kidia adopted import restriction policies in the 1950s. The exporting transnational corporations had to seek a new way to keep the 'old' markets for their commodities. They also tried to enter theVnew expanded market' created by huge public investment in compliance with the industrialisation policy of the Government of India. They devised some schemes for sharing the market. The schemes were 'collaboration' with the Indian entrepreneur, establishing subsidiaries in India and acquisition of existing Indian firms.

The factors that led the Indian entrepreneur, to establish linkages with the transnational corporations were the industrial policy of the Government of India, strong xenophilia of the Indian consumer society, and the pressure from foreign financial institutions.

After 1947.t the nature of industrialigation "that the Government of India wanted to foster was a copy of that of the cfeveloped countries. This needed technology and capital. But there was no programme fer tile development of indigenous technology. On the other hand, the Indian entrepreneur had already established linkages with the transnational corporations as importers and exporters respectively. Under the influence of the Government of India's import restriction policy, the Indian importers for the sake of survival had changed the form of their enterprise from trading to manufacturing. A_s manufacturers, they wanted to hold the same market they controlled, with the same products, already known to their customers. The gambit of the Indian entrepreneurs was to manufacture the product with the same technology as used by foreign manufacturers? which were the previous exporters, and this was the easiest way of remaining in the same market, 50

To the new Indian entrepreneurs, the information regarding thj world market of technology wag limited, They were not in a position to enquire as to whether the technology could to purchased outright. On the other hand, the transnational corporations did not sell technology, macBiinery and processed ^aw materials as simple merchandise; they demanded either the payment of royali etc. for their utilisation or in most cases, they converted these goods into capital and introduce them in the form of their own investments.[51] This factoi led ihe Indian entrepreneur to take the transnational corporations as partners in the production.

IXi3 to strong zenophilia of the Indian consumers,Indian firms had to – rGiy on foreign brand names. 'Without them they would almost certainly have lost out in competition with new entrants to the industry who load the foreign distinctionsChe of the reasons is "that, 'almost invariably, an imported article is ipso facto preferable to one made in India and commands a higher prices; a foreign brand manufactured locally by a foreign firm is better than ^no^oade by an Indian firm; and so down the line with decreasing value accompanying receding foreignness.[53] This alone is a strong inducement, for Ind: firms to seek foreign links".

The other important factor favouring the foreign sources, as we have already mentioned, is tiae reliance of the Government of £idia on foreign financial institutions, ^e will discuss theBsliance of Indian firms on ihem subsequently. These institutional credits mainly assist the oiterprises dominatedty, or in contact with the transnational corporations.

We now shift our attention from the general economic situation to the particular case of the power equipment industry in India. In a Government Report on electrical equipment published in 1947, it was mentioned that a team of American experts, Messers Ford, Bacon and I&vis, were asked by iiie Governme of India to report on the manufacture of industrial machinery and equipment in India. Their comment, included in that Report, was as follows i *Indus- trialisation in India would be expedited if the designs worked out in other countries could be secured for manufacture in India with such modifications

ag my be necessary to adapt the products to the peculiar conditions existing, Many products are protected in other countries by patents but generally it is possible to negotiate for the use of patents, licences and acquisition of working, drawings and specifications [54]. The Government Panel adopted the same view.

Thus, the factors, discussed above, together created an opportunity for the establishment of the linkage between transnational corporations and the power equipmait manufacturing sector in India.

T'APfofl^ 'Through Joint Ventures.

We would first discuss "the natureof linkage "through joint ventures of the transnational corporations and the Indian entrepreneurs. On the basis of typical collaboration agreements in the power equipment manufacturing industry, we would attempt an analysis of iiie process and mechanism of linkages between the Indian companies and the transnational corporations. ('-Che quotations that are used to substantiate our analysis if not otherwise stated have been taken from actual agreements)[55]. In these, agreements were written what the Indian company would acquire from the'foreign company, as well as what the former would be able to do, and what it would'not. a sense, the collcu boration agreement becomes the 'charter of linkage[1].

The Indian entrepreneur either controlled a company before the collaboration or would form a company after collaboration, in cases of collaboration agreements involving financial participation, the foreign collaborator obtained a representative on the board of directors of the company. In one agreement it was stated, for example, that, the transnational corporation shall have the light to nominate.two iUrectors. Out of the Directors to be nominated by /"the transnational corporation^ one shall work as the Technical Adviser of the Company and shall be in charge ^f the technical management including designing manufacturing technique and progressive development of production technique in close cooperation with /"the trans-national corporation 7

Then the Indian company (here after referred to as IC) aimed at manufacturing the scheduled products. What it needed first was a project report.

In a typical collaboration agreement, it was mentioned that the transnational corporation (hereafter referred to as TNC) "agreed to furnish or make available to the IC following information relating to the establishment of a transformer manufacturing factory by the IC:

i) Layout of factory buildings with other design information including drawings and plans of the main and auxiliary buildings, so as to enable the Indian architects to prepare detailed drawings and estimates.

ii) Layout of machinery, and equipment to be installed in the factory buildings, indicating requirements of power, water and air at several points.

iii) Foundation drawings of special machinery and equipment.

iv) General layout of power substation equipments.

v) Specification lists for the purchase of machinery and equipments, transportation equipments, power sub-station equipments, tools, and stationary facilities.

vi) Advice relating to the establishment of the factory".

So the factory was built. The Indian entrepreneur was then faced with the question as how to produces He needed the process kndwhow, and got it from the foralgn Collaborator. The TNC agreed to supply and deliver ... the following teciiiical data :

(a) Standard manufacturing 'drawings, hills of materials and material specifications covering the said products,

(b) Current manufacturing methods (including process sheets and operation timing)..and assembly practices and techniques (including confidential processes and methods) as known, to /"TNC 7 relating to the manufacture of the said products.

(c) Current test and inspection procedures as known to /PRC 7 in connection with the manufactare of the said products".

' To" another IC the followings were furnished by .the TKC ! i>esign Drawings, Ifesign Sheets, General Data on Process Control, instruction Manual on forking, Production Han, But the IC will have "to use all drawings, specifications? technical information and data supplied by /"TNC 7 hero under only in connection with iho manufacture and sale of scheduled products".

•a. So the Indian Company got the. process knowhow. It came to know how to produce. ₩ After that it needed machinery and equipment to manufactui^^the-scAedul'odiproducts. The source for these was also often the foreign .collaborator,

..Firstly, the foreign collaborator would supply the information en machinery,, equipments,-parts. -"Lists, drawings and specifications 'showing types and. description of all machinery and "equipment to be used in connection with the manufacture• of the said products" together with the list and description .6'f special tools and fixture; Drawings of all jigs, dies and other tools necessarv for ihe manufacture of the said products".

"Drawnings of spare parts, sub-assemblies, assemblies of necessary, rartial nomenclatures and special manufacture notes, instruction notes for w- chining and assembling stating the sequences of operation and the time allocated for each to initiate batch manufacture, also tools and templates". If the Indian company gets the specific informtion on machinery, etc. it has no other way but to have the particular machines, etc. from the foreign collaborators "/'W^ill supply with complete equipments, sub-assemblies or parts of their cwn manufacture as constituent partscorresponding to the contractural products at the earliest possible time compatible with its manufacturing programme".

In order to manufacture, the Indian firm after getting machinery, etc. required raw materials. There also came help from the collaborators. The TNG would' provide "feet specification *of,* all raw materials used for the manufacture of the said products and process of manufacturing,mixing or treating--such materials:as known to and under the-control of /"TNC

^"The Indian entrepreneur thus established a factory. Ho had the loan of the process knowhow. He procured the machinery and raw materials. In the manufacturing process what he required then was manpower. This necessity ipade him take help from the .collaborator. "/"TNC 7shall arrange to provide training in the plants and establishments of /"TNC 7 in /"the foreign country7 for such employees of /~IC7 for such periods as nay be reasonably necessary for the manufacture of . the said products by /"IC 7**« Tlie training ... will cover the entire field of designing, production, maintenance, sales and services of the said products including drawing, designing, production planning, selection and. treatment of raw materials, machinery processing, assembly, market research and sales promotion".

Training of the employees of the Indian firm took time. In the mean time, "/"TKTC-7 agrees to cbspatch a reasonable number of engineers to the /"IC 7 to give necessary technical advise and guidance in operating the factory, plants, training the /"IC 7!s engineers and technicians in the job at the company's factory in designing, manufacturing, inspecting and testing products'*.

The Indian entrepreneur then started production. The next phase involved the advertising of his product. V" IC 7 shall useih© technical and advertising document of /~TNC 7relating to the contractual products and shall submit to /"TNC 7 for approval of all technical matter relating to the contractual products intended for advertising and for information purposes, before any circulation is made".

The Indian firm at that point was ready to sell its products. But the mode of selling again did not lie entirely on its own to decide upon. It was specified by the collaboration agreement in which- it was embodied that, n/"lC 7 shall have the right to quote, for and export the said products to -the /mentioned7countries after" getting clearance from /"TNG 7".

There wore other such explicit clauses dictating the movement of products of tlie Indian firm. This might be (a) in lho nature of total ban on exports to all, or some countries (b) limiting the right to export within certain areas and (c) prohibiting the right to export to certain countries.

After a few years the Indian firm might intend to improve its product, to extend the range of its products or to produce a new product. To improve the quality of the product or the product process, research is a necessary element. The foreign collaborator under took to carry out specific research on behalf of "fhe Indian firm. And it was inserted in the collaboration agreement that, "As a contribution to the actual cost of Research and Development applicable to the improvements and developments of the said products incurred by /"TNCJ7 in /"the foreign aountry7* /"IC 7a&rees to pay to /"TNC 7 at a Bank /"in that foreign country 7"• Moreover, as tie foreign collaborators were the technical assistants of the Indian firms, thoy f time to time communicated to the IC any invention, improvement, or development relating to the scheduled products. "Airing the continuance of /"the 7 Agreement ... /"TNC 7 shall continue to furnish full informtion in respect of any improvement or development applicable to any of the said products and/or the process and methods (including confidential process and methods) of manufacturing them and/or materials accessories of components thereof made by /"*TNC 7*neluding patents or inventions or any new design which my be

developed by /"TNC 7 [a]s alternative for any existing design of the said products* provided that such information shall be furnished by /""TNC 7 cforesaid after the improvement or development has been sufficiently proved to be satisfactory"..

These factors were related .to the improvement of the existing products. The Indian entrepreneur might also want to extend the range of the product.- "If the /'IC 7shall during the continuance of f the 7 agreement require designs for electric products not within the range of products then being manufactured by /"INC 7> it shall give notice in writing of such requirements to / TTC "/ and ihere upon provided such requirement relate to /"some product of some range 7 /~TT[V]TC 7 will produce designs therefore, md if such requirements relate to other electrical products /"TNC 7 will produce the design therefore or consent to the /"IC 7 obtaining design elsewhere".

Furthermore, if the Indian firm'- intended to manufacture additional products, its responsibilities were also incorporated within the collaboration agreement : "Should f IC 7 contemplate the manufacture of products additional to the scheduled products during the continuance of /"the 7 Agreement the /~IC 7 shall forthwith give notice in writing to the /"TNC 7 of the nature of such products and "if "these are of a type already cade by /"TNCJ7, /"TNC 7 at i o p t i o n may agree to assist or to collaborate with /"IC 7 in the manufacture of such products".

The improvement of, or extension to the range of, or additions to the production, led to the continued flow of knowhow.

Wo have discussed mainly the technical aspects so far. We now turn our attention to the financial aspects. The Indian firms got financial assistance from foreign government and foreign financial institutions, indirectly and from foreigi collaborators, directly* The foreign financial institutions extended to the. "Government of India credits for covering requirements of various equipment needed for power development® This created markets for the products of the cicatrical equipment manufacturing firms.

The Indian ElectrieaJL. .'J&nuf&ctuiter—^s' Arcooiation publishes its "Demand Survey of Electrics!„Squip:*eht" from time to time. According to this publication, the AssociaLIon, esarefi&iy studied the annual addition made to the generating capacity in the. last few years and /"* the 'Demand Survey[1] was also based on the assumption of timely availability of foreign aids and foreign .exchange"* 56

This view could be corroborated by citing the following incident. *'A World Banjc Team had visited India early in —December 1971. While in Bombay, the team had met the. representatives.—.of—the Association for a discussion on the •'various aspects of Indian electrical industry. In the course of the meeting and subsequent correspondences with the World Bank, the representatives of lhe sociation impressed upon the Team that the electrical products should be brought back under the IDA (International development Association) list. As a result of this effort, Power Transformers upto *53* KV and switchg?ear industries have now been added to the list of IDA industries"* to be entitled to get foreign exchange loan.—

Some Indian financial institutions act as agents to provide foreign currency loans to enterprises in India. In this sphere also, there exist linkages with foreign economic powers. We may consider the Industrial Credit and Investment Corporation of India Ltd. as a case in point. It was set up as a financial institution in 1955— The idea to form such type of institution was conceived in •1955— As'a first step the International Bank for Reconstruction and Development (World Bank) sent a mission consisting of Mr, George Woods (once President cf World Bank)? Mr, Robert H. Craft and Mr. Joseph Rucinski to India "to explore the possibilities of establishing a privately owned and operated development corporation to finance the expansion

industry..." (Ninth Annual Report of the World Bank). When the mission reported to the World Bank., a steerU?s committee, consisting of three leading Indian industrialists, Sir A, Rimasw^y'— iar, I.:r, *// &* Birla and Mr. A.D. Shroff was set up to "discuss with the World Bank the constitution and structure of the new financial institution*; Tlie first Board of iJLrectors of ICICI consisted

of three foreigners, Mr. P. S. Beale, Chief Cashier of ihe Bank of 4igland was appointed the first General Manager of ICICI in January .1955. In February 1955 the share capital of Rs. 5 crores was offered to the public. Of these 30 per cent was offered to —"oreign (then British and U.S.) investors, —among the subscribers to the share capital, there were several foreign financial sources, like the Chartered Bank of India, Australia and China; Commonwealth —Development Finance Company Ltd.; Sun Life Assurance Company of Canada in the U.K.; Mr. John D. Rockefeller III, Olin Mathieson Chemioan Corporation, Rockefeller Brothers Fund Incorporated and ^ontiJMr House Electric International in the USA, Che of the objectives of the ICICI is to provide loans in foreign currencies for payment for imported capital equipment and technical services. In this respect it gets foreign currencies from the World Bank, the —Development Loan Fund (now merged with the Agency for International Development) US*t» Kreditanstalt fur Wiederanfbau (an agency of the Government of Federal Republic of Germany) and the Government of U.K. ICICI's relations with the World Bank and tho International Finance Corporation extend beyond the financing of individual projects, for example, ICICI sends its staff members for training to the World Bank and nor/ to the IFC. Upto 1964 the electrical equipment industries received 8.8 p.c. of the total loan sanctioned by the ICICI.[58]

Financial assistance from foreiga collaborators is conducted in a more Urect way. The Indian firms generally formed joint ventures with tho suppliers of technology, the transnational corporations, the latter talcing a share of the capital.[59]

After discussing the nature of ihe linkage established throu^i [1]joint venture[1], we will now analysis the other two forms of linkage, namely, acquisition of already existing Indian firms and opening up of .Indian subsidiaries.

In this respect wo will simply cite two cases of each of the forms# first the acquisition of an existing Indian firm producing electric power equipment, by a transnational corporation in the power industry, and secondly, the opening up ofan Indian subsidiary of a transnational corporation in the power- industry.[60]

Linkage Through Acquisition

In tiie first case 5 the Indian firm —was established as an engineering firm in "1942 by an Indian entrepreneur. The promoter entrepreneur was technically well qualified, with such degrees as , A.M.I.E. (U.S.A.; Mem, Am. S.M.E. (USA).

The initial licence was secured for tho establishment of two companies for the manufacture of AC.SR Conductors* copper and alluminium c endue tors and wires of all categories Substantial and valuable orders and contracts were received from the Central and the State governments. Regular production of transformers was started from 1955* Ihe unit set up for the manufacture of transformers and switch gear at TTest Bengal was probably the largest transformer works in India at that time. The unit had one of the most modern design and drawing officio and it manufactured transformers with its own designs. has excellent designing, manufacturing and testing facilities. In view of the excellent production facilities* the quality was remarkably good and the demand for the,company's products was very high. The factory for the manufacture of electric motors, generators and allied machinery was one of the largest motor works in India. A large design tind drawing office was established for this works, and motors were manufactured with their own design. Their products and services .were valued for "their high quality and there was even an increasing demand resulting in repeat orders—from the Central and practically every State government. A large number of.electric motor designs and prototypes were levelоped, tested, finalised, —.and put into production during 1956—57. Electric motors manufactured by the firm was the first recipient of the Indian Standard —Institution (ISl)'s quality mark, <' 'At the unit in West Bengal, Switchgear designs and development division was established and substantial progress was made in switchgear designs and prototype. The Oil Circuit breakers designed and manufactured by the firm were the first in India, which have been tested and ipproved by the International testing Authority, Holland. The firm received tho industrial licences for establishing a new industrial undertaking for the anufacture of transformers of all types. The unit commenced production during 1959-60 and trained its workmen, manufactured, and delivered over 100 transformers with their own cbsign.

1963, tho fim came to bo linked with a largo transnational corporation, 'iho reason behind this could not be found in: any document of the firm.

Tho transnational corporation (TNC) changed the structure of the firm, the indigenous technological and capital base of the firm, and brou^it it into its control. The TNC acquired more than 50$ of the equity voting power in the firm. The name of the firm had been changed in order to incorporate the name of fee TNC. The firm started to act as a selling agent not only of the TNC but also of *iho* foreign associates of the TNC of the various types of the heavy electrical and meehanical equipment. For example, the firm negotiated for tho TNC's associates of the same country of origin regarding a large order from a State ELoctricity Board for the supply of two turbo sets and high and low tension switchgear and ancilliary equipments.

The indigenous design of electric, motor wa,s changed and it was declared in the annual report"of the firm in 1964-65 that by the aid- of the year, tho •ajor portion of the motor production would be according to the TNC's design. Moreover, the firm concentrated on the expansion of sophisticated product lines and started the manufacture of the hi^i tension air blast circuit breakers with the latest design from the TNC. The same was the case in manufacturing hi^i voltage isolating switches.

The additional funds required to finance tho increased manufacturing .activities of the firm were partly mot out of oredit facilities extended by ~?.e THC on "their supplies of materials.

"ir.kage Through Subsidiary

In the second case ihe fim was incorporated in India in 1957 as a subsidiary of a foreign firm. The parent firm was a largo transnational corporation in power equipment industry.

In tho Board of Directors l the Chairman was an Indian* but the four ranaging directors were representatives of "the TNC. The firm's main activity has been the manufacture of the product under licence from the parent firm,

the.. TNGi For this purpose the TNC exported to the fire, J-he subsidiary in India, drawings and other particular^. of design details of the manufacturing process, specification of raw materials and components, and their treatment. For setting upthe plant, TNC furnished the list of equipments, specification for services needed for "the plant and the general layout of the factory buildings and other plant services. TNC assisted the firm in the selection of equipment erection and trial runs of the machine, and planning and organisation of the production. TNC deputed qualified technical personnel to the firm and trained the firm's engineers at its plant. Hie firm Imported machine tools* jigs, tools* fixture and-instruments developed by TNC for machining, assembling and testing. . TNC assisted the firm in the selection of this equipment.

Initially the TNC held 47% of the equity share of the firm, When, the additional capital was required to. finance the expansion of manufacturing activities of the firm, the entire foreign exchange requirement for the first stage of the proposed expansion of the manufacturing activities was met by the TNC, firstly, by increasing their participation in the sha.re capital to *51% of* the increased paid up share capital, and secondly, in the shape of loan for the balance.

In'a memorandum of 1965* from the General Manager *of 2CIC1,* it was mentioned that, internationally well known name and trade marks of the TNC would assist the' firm in marketing its product.

We have s-o far discussed the nature of different forms of linkages established between the transnational corporations and the manufacturing sector of the power equipment in India.

This linkage is cfetermined by several factors. The Government of India imposed import restriction policy to provide opportunity to Indian entrepreneur to manufacture the power equipments,, '-ftiese equipments were to be made to cater to the needs of the power plants. Power plants were designed by the transnational corporations according to their standards.

To acquire that,experience, investment in research was needed, investment in research and application of the result into production had a long gestation period. Indian private entrepreneurs hankered after quick profits. The 'easiest[1] way before then rxs to get quick profits was to establish linkages with "the transnational corporation. With the transnational corporations, Indian entrepreneurs had previous linkages as exporters, and importers, respectively. "They together'wanted to share the market with the same technology and trade marks* Strong xenophilic attitude of the Indian market also provided the incentive. Import of technology needed foreign exchange. Foreign financial.sources and the transnational corporation extended foreign exchange loans. Foreiga financial sources acted in favour of linkages of transnational corporations.

...Hence, mere change of economic activity from trade to manufacture did not wipe out the circle of linkages* It just broke the previous circle and supplemented it with the formation of a new circle.

Linkages of TNCs with The Power Equipment Efanufacturing Sector In India s Biblic ihterprise

It is generally presumed that "there are certain differences between the nature of operation of an enterprise in "the private sector and that of an enterpri.se in the public sector of a country. Che of the major differences is considered to be the fact that earning quick profits forms the primary goal of a private sector enterprise whereas a public sector enterprise does not consider this as a major guide line.

We have examined *in* the last section that the consideration of quick profits by the electrical power equipment firms played an important role in the establishment of linkages with the transnational corporations, ^lthou^i not guided by ihe^me consideration, the public sector enterprises also acted in "the same way to come in contact with the transnational corporations, in some cases with the same TNCs.

A document has recorded the fact that the decision to establish a factory for the manufacture of heavy electrical equipment by "the Government of India, [f]was sequel to number of forces set ,in motion during the ^receding decade,-calculated to tike the country toward self-sufficiency in basic industries,, including? heavy electrical equipment required for the power development programmes'. Rirsiiant to the findings of the Advisory Planning Board (Dec. 1946) and the reconanendations of a Technical Committee on ihgineering Industries of the Industrial Conference held in December 1947 the Government of India appointed a Committee early in 1948, headed fcy the then J&rector General of Industries and supplies, to explore the possibility of developing the manufacture of of Heavy Electrical Power Rant to meet the requirements of the generation, transmission and .distribution of power in the country. The Committee, emphasized the urgency of establishing such a factory and noted that, "No country which wishes to develop its industrial potential can afford to be wholly dependent on other countries for supplying its requirements of basic electrical power plant. India's large plans for the development of hydro-electrical and rivei^valley projects depend entirely en foreign oountries for their basic plant. This is lamentable position to be in, as it puts the power supply industry in jeopardy in time of war".[g2]

This view was supported by an inte»-Ministry meeting held on August 26, 1954, where the conclusion that was arrived at me tio.l:

> 'No country which wished to develop its industrial potential could afford to be wholly dependent on other countries for supplying its requirements of basic power plants'.[63]

Che motive was a reflection of the effort to achieve economic independence, but the way to translate the motive into practice did not reflect the same

In the report of the same exploratory Committee it was suggested that the government should establish the factory in collaboration with foreign manufacturers of 'world repute[1]. $he Minister of Production, on the issue of establishing heavy electrical equipment factory, raised in the Lok Sabha on June 18, 1952, said that, 'For a factory to manufacture these, wo need of course help and assistance from abroad, from.the progressive countries of the west like America*. The Ministry of Production then convened a meeting of the representatives of the banning Commission and the Ministries of Commerce and Industry (ifevelopment Wing) and Finance etCt on January 2, 1953. The meeting decided that the first step would be to approach foreign firms of 'international repute[1] to ascertain if any of them would be interested to provide _ technical and finanoial participation necessary for the establishment of the factory. At another inten-ministry meeting held on April 4, 1953* it was argued that technical advice from experts of world wide repute would be essential for deciding the capaoity and location of. the factory and the precise sectors of the demand which the factory should aim at supplying.

As the ..project, built with the collaboration of foreign firms needed a considerable amount of foreign exchange, the consensus of the opinion of the interuMinistry meeting was that technical advice from foreigi firms should be made acceptable only on the explicit condition "that it would be followed by financial participation in the schemes by the firms concerned. But a Committee constituted by the Ministry of Production in October 1954 raised an objection that, financial collaboration should not be made a neoessary condition for the selection of consultants. Such a C9ndition would unduly restrict the field of choice of prospective consultants. - Hie Mfnigtry of Production accordingly recommend in Aferch 1955 to the Government that, sane qualified firms of leading electrical manufacturers of international repute should be invited to discuss the scheme and to indicate the basis of their technical, and if possible financial collaboration and thereafter one firm should be selected to prepare a detailed scheme for the project. The project report should be called for on the basis that while financial participation

by the technical consultants would not be a necessary condition, schemes offering such participation would be given special consideration.

The Minister of Production thereupon invited firms of international repute to submit project reports on the understanding that the firms should themselves propose a manufacturing programme which in. their opinion would constitute an economic proposition.

Three important points are to be noted in this context. First, the programme of construction of a powear equipment factory was undertaken to supply equipment to —fee power plant(s)> designed by ihe foreign consultants according to the standard of "their home country. Thus* the equipment to be manufactured in the factory also followed the design of tlie developed countries. Hence there was need for a 'firm of loading electrical manufacturers of world repute* to be appointed as a ccnsultant to tiie proposed factory.

Secondly, thou^i it was observed that, consideration of tying[1] teohn^gal collaboration with financial collaboration would unduly restrict the fio^d of choice of foroiga consultan ts> it was decided that scheme offering finanojlal participation would be given special consideration.

• Thirdly, it was decided that not the Government but the foreign consultants would themselves propose the manufacturing programme.

Ihe field was thus prepared to establish linkages between the public sector enterprise in the manufacture of power equipment and the transnational corporations.

We will discuss the linkage .with only one transnational corporatian in the early phase of the project ae & .case in point. <

A Case" Sturl.ys Heavy KLootrioals f India) Ltd.

.On November 17, 1955, an agreement was signed between tho Government of India and ike Associated Electrical Industries Ltd. (AEI) of United Kingdom, a well known transnational corporation in tho electric power equipment industry, for the proposed heavy electrical equipment factory in ihe public sector.

AEI was selected as consultants to the Heavy -^ectricals (India) Ltd., the public sector enterprise in the manufacture of power equipment. The consideration which guided the Ministry of Production in its choice of "the AEI were several. In a note in September 1955, submitted to the Cabinet Committee, the the Ministry of Production mentioned the most important reason as that, ASI was willing to go in for financial participation. Another reason was the AEl[1]s link with atomic research. Hie AEI was among the loading groups of firms •^elected by the UK atomic energy authority for developing atomic power sta-fcions. Lr. Bhaba, Director of levelopm'ent of Atomic Energy in India, had stated that other things being equal, the AEI should get preference because of -v- this factor. This was an important consideration and the AEI had also offered its cooperation in developing atomic energy power stations in India.

In the-agreement, the functions to .be performed by the AEI, were :

i) preparation of detailed project report,

ii) preparation of plans and specification of tho plant, machines, equipment and materials,

iii) examination and scrutiny of the tenders received,

iv) indication of delivery requirements of plant and machinery,"- W •[1] -

v) supply of**floor plans ..and general floor specifications,

vi) supervision of the construction of the "factoiy,

vii) rendering technical advice in the operation,

viii) preparation of a suitable training scheme.

The features of a 'chain-effect[1] of ihe linkages with the transnational corporations were also present in this case. First, AEI acted as the purchasing agent of HE(l)L, and most of tho equipment was-imported, from AEI's factory in

the U.K. Secondly, arrangements were made for obtaining technical assistance fron the transnational corporations of the same country of origin. Thus subsidiary agreements were entered into with the 4iglish Electric C_0., UK, and the British Insulated Cailendars Cables Ltd., UK for "the manufacture of hydraulic turbines and capacitors respectively.[65] 'Thirdly, sterling loans were received fr.om..:AEI, .and' British Insulated ©s&l—swflfrra Cables.., Fottrtfrly, services of foreign technical specialists for assistance and guidance in the various fields of the manufacturing and design activities were supplied under the Colombo Han.[67]

The most import/aspect of the collaboration between AEI and HE(1)L was the making of a situation of continued collaboration, as revealed by two reports of the committees appointed ty the Government of... India. One was the 19th Report of the Committee on Public Undertaking of the Fifth Lolo Sabha,[68] and the other was the 89th Report of the Committee on,Public Undertakings of the Fifth L_0k Sabha*[69]

To the first Committee it was stated by a representative of HE(1)L that, 'in the case of hydro turbines, it is not as if one machine can be just used exactly in another location. So, each machine for each loaction has got to be designed. In spite of the fact that we.got specifications and drawings for 30 machines, we had to seek the assistance of the consultants for either modification pr for redesigning of five schemes'.

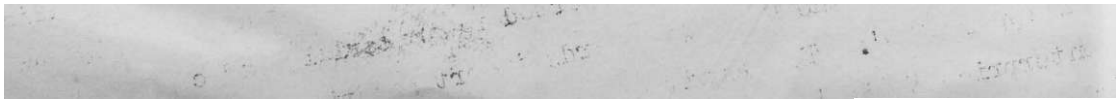
The Committee was of the opinion that 'there was no specific provision in the Project Report for activising self-reliance by developing indigenous substitution for imported raw materials and components. The performance of the Company towards import substitution had been rather disappointing'. The Committee was informed by a representative of the enterprise that, 'achievements of cent percent indigenous content i_s not a practical proposition'.

To the second Committee the representatives of the public enterprise on electric power equipment stated that, 'duration of an agreement should be with due consideration for the gestation period of the paroduot and the time acquired for the absorption of technology, and thus there should be provision for extension of duration of agreements', and moreover 'there should not be any hard and fast rule regarding the period of a licence agreement'. Regarding the adaptation and development of technology they were of the opinion that 'one time purchase of technology may not be feasible till such time we are.able to develop our R & D facilities at least to the minimum international standard: and at tfa© saae time they informed that their R & D expenditure in 1974—75 was of the order of 0.34?£ of their turn over. Hence, they came to the conclusion that 'capability in developing new products I0 yet to be fully established and we have to go a long way in developing capability in developing basic knowhow' and naturally have to go with transnational corporation, as "they opined that, 'limited collaboration for consultancy services is unavoidable[1]. So, the linkages with transnational corporations has continued.

In the case of the public sector enterprise, the circle of linkages was, in essence, the same as that of the case of the private sector enterprises. Only one or two elements varied.

Conclusion

It follows from the above discussion that the mere change of the economic activities, from trade to manufacture, in the private sector or from manufacture in tho private sector to manufacture in the public sector does n^t sigiify the end of linkages between transnational corporations and a third world country. In essence, it remains the gime, though the nature may change. 0 • '•—"



If the path of industrialisation and modernisation of the developed countries is followed by the third worl3 countries, there is no other way but to establish linkages with transnational corporations. If the target to be achieved and "(he way to attain the target are determined on the basis of their own resources of technology and capital, tho third world countries may out of the orbit of the operation of transnational corporations.

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'Franoe ral.lo to Belgium and Spain. West Germany has large markets in the Netherlands, Belgium, Ireland and Denmark. Britain has sold very little in Western Europe: her traditional markets have been countries in the Commonwealth preference area – Australia, Hongkong, South Africa and so on' Epstein, op cit, p. 7.

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